

## TWO NEW GENERA OF DEVONIAN TETRACORALS FROM AUSTRALIA.

By A. E. H. PEDDER, University of New England, Armidale, N.S.W.

(Communicated by Dr. G. M. Philip.)

(Plate xix; two Text-figures.)

[Read 27th November, 1963.]

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Synopsis.

The genera *Zelolasma*, based on "*Diphyphyllum*" *gemmiforme* Etheridge, and *Sulcorphyllum*, based on "*Prismatophyllum*" *brownae* Hill, are erected. *Zelolasma* may be represented by a late Wenlockian species, otherwise its range is Siegenian to Emsian or Eifelian; as presently known *Sulcorphyllum* is restricted to beds of probably Emsian age.

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INTRODUCTION.

Work on Australian Devonian tetracorals has revealed the need for new genera for several well-known species. Among these are "*Diphyphyllum*" *gemmiforme* Etheridge and "*Prismatophyllum*" *brownae* Hill. *Zelolasma* is here proposed for the former and *Sulcorphyllum* for the latter.

## SYSTEMATIC DESCRIPTION.

## Family DISPHYLLIDAE Hill.

## Genus ZELOLASMA novum.

*Name derivation*.—Greek, ζελος = rivalry, and ελασμα = plate.

*Type species*.—*Diphyphyllum gemmiforme* Etheridge, see below.

*Description*.—The corallum is sub-massive and characterized by abundant multiple and peripheral budding. The corallites are short and fundamentally sub-cylindrical, but are commonly so crowded that flattening occurs at the contact of adjacent corallites and in places the corallum is quite cerioid. Septal grooves may occur on free corallites. The epitheca is thin and consists of a narrow axial plate and an inner fibrous layer (terms from Flower, 1961, p. 28). The axial plate is not thicker between touching corallites, nor is a dividing line visible in it. The relationship between the septa and the wall is shown in Text-figure 1. The septa are roughly radially arranged, short and only just differentiated into two orders. In transverse sections their peripheral part is normally smooth and either straight or only gently sinuous, but their axial part is wrinkled and slightly carinate. Most septa are uniformly thin, a few are dilated throughout, or in the axial region only. The trabeculae are directed upwards and inwards; distally they tend to flatten, forming a ragged edge to the septum. The dissepiments are mostly small and globose although the outer ones are commonly larger and rhomboid. Typically the adult dissepimentarium is composed of two to four ranks of dissepiments. Tabellae occur, but are not common. The tabulae are very variable and may be complete or incomplete; most are gently concave, some are straight or convex.

*Distinctions*.—The common multiple budding and resultant sub-massive corallum, together with the almost undifferentiated septa which are, if anything, less dilated peripherally than axially, distinguish this genus from other disphyllids.

Apart from these distinctions, *Cylindrophyllum* is much more carinate, *Disphyllum* has well-developed tabellae and the type species of *Acinophyllum* has extremely prominent lateral processes.

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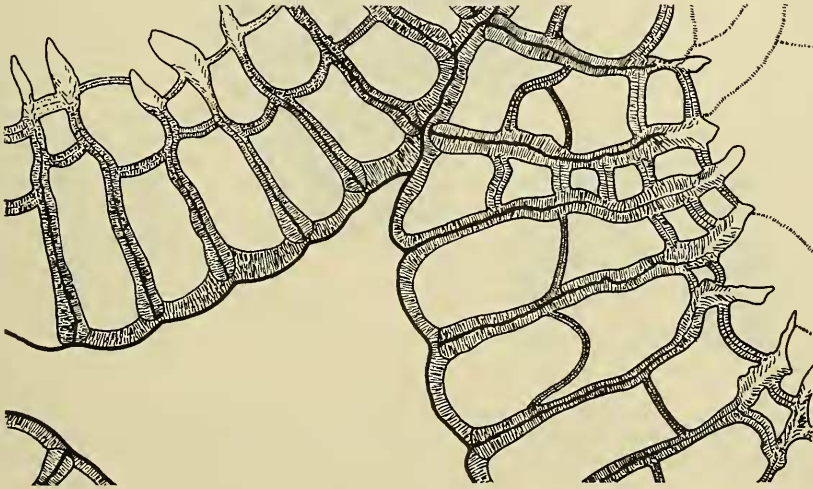
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*Species assigned.*—*Thamnophyllum abrogatum* Hill (1940*b*, pp. 260, 261, Pl. 10, fig. 4) and *T. curtum* Hill (1940*b*, pp. 261, 262, Pl. 10, fig. 5). Both occur with *Z. gemmiforme* in the Cavan Bluff Limestone.

*Species doubtfully assigned.*—*Disphyllum praecox* Hill (1940*a*, pp. 398, 399, Pl. 11, figs 15–17) from the late Wenlockian Bowspring Limestone, N.S.W. The minor and major septa are better differentiated than in *Z. gemmiforme* and its growth form is not so obviously sub-massive as is that of the type species.

*Hexagonaria mayendorfi* Le Maitre (1952, pp. 59, 60, Pl. 5, figs 1–3) from the early Emsian of Algeria. This species appears to resemble the type species, but is entirely cerioid.

*Distribution.*—In addition to the above occurrences, *Z. gemmiforme* has been identified (Hill, 1942*b*, Pl. 6, fig. 6) in the Siegenian (?) Garra Beds of N.S.W. and an undescribed species (University of New England no. F8687) occurs in possible Emsian or Eifelian beds near Mudgee, N.S.W. The total range therefore of *Zelolasma* may be late Wenlockian to Eifelian, but definite occurrences at the present time are confined to the Lower Devonian of N.S.W.



Text-fig. 1. *Zelolasma gemmiforme* (Etheridge); transverse section,  $\times 24$ , based on University of New England no. F8688.

*ZELOLASMA GEMMIFORME* (Etheridge). (Pl. xix, figs 1, 2; text-fig. 1.)

1902. *Diphyphyllum gemmiforme*, sp. nov.; Etheridge, pp. 253–255, Pl. 37, fig. 1; Pl. 39, figs 1, 2; Pl. 40, fig. 1.
1909. *Diphyphyllum gemmiforme*, Eth. fil.; Harper, pp. 45, 46.
- ? 1909. *Diphyphyllum gemmiformes*, Eth. fil. (*sic*); Harper, p. 47.
1922. *Diphyphyllum gemmiforme*; Süßmilch, p. 63, figs 21D, 22.3.
1922. *Diphyphyllum gemmiforme*, Eth. fil.; Benson (*pars* ?), p. 148 (65).
- 1940*b*. *Disphyllum gemmiforme* (Etheridge); Hill, p. 259, pl. 10, figs 2*a*–3.
- ? 1942*b*. *Disphyllum gemmiforme* (Etheridge); Hill, p. 183, pl. 6, fig. 6.
1959. *Disphyllum gemmiforme*; Browne, pp. 117, 118.

*Types.*—Holotype, Australian Museum, Sydney no. F5171. “Cave Limestone”, Taemas Bridge north bank of Murrumbidgee River, Parish of Warroo, N.S.W. Harper named the beds from which the type came the Bluff Limestone. The name is now modified to Cavan Bluff. Etheridge (1902), and others after him, regarded this as Middle Devonian. It is more likely to be Siegenian.

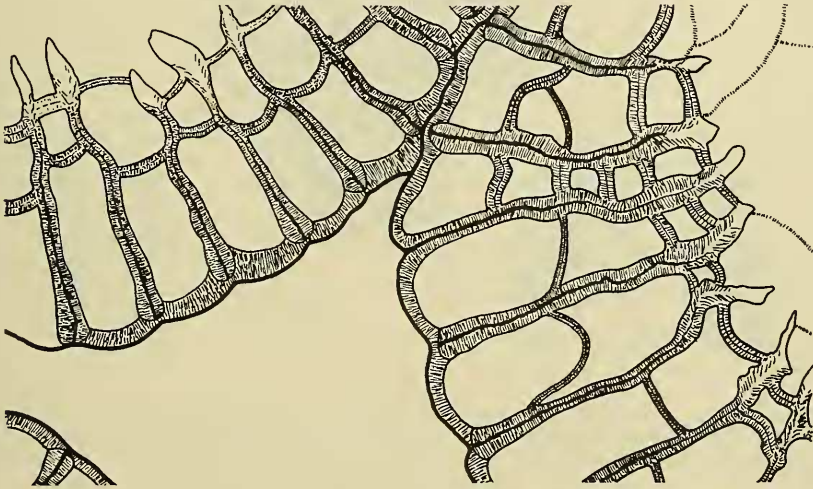
Hypotypes 1 and 2, University of New England nos. F8688, 8690. Cavan Bluff Limestone, Clear Hill, Portion 5 or 136, Parish of Cavan. This is about two miles south-east of the type locality.

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*Remarks.*—Etheridge and Hill have given descriptions of the species, but both underestimated the maximum width of the corallites and number of septa, which are at least 13.0 mm. and  $25 \times 2$  respectively.

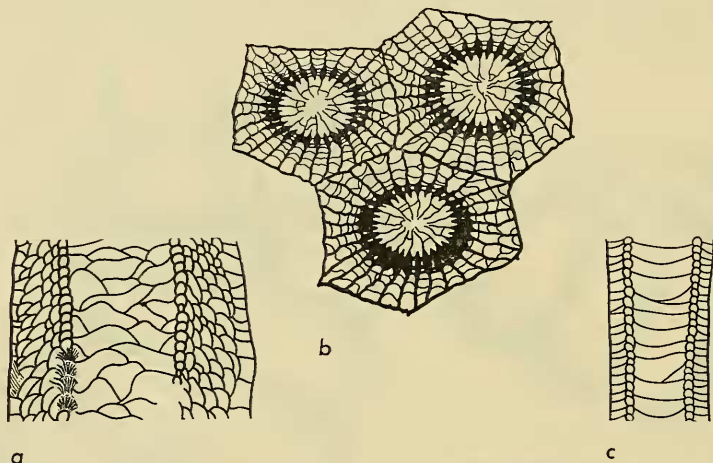
Family PHACELLOPHYLLIDAE Wedekind.

Genus SULCORPHYLLUM novum.

*Name derivation.*—Sulcor Quarry near Attunga, N.S.W., and Greek, *φυλλον* = leaf.

*Type species.*—*Prismatophyllum brownae* Hill, see below.

*Description.*—The corallum is cerioid and increase is peripheral giving single, or more rarely multiple, intermural offsets. The epitheca is thin, straight, or slightly zigzag between the main angles and consists of an axial plate separating two thicker layers. The latter are presumably the fibrous layer and traces of a fibrous structure are just discernible in some specimens, but most of the available material is too poorly preserved to be certain of this. The septa are radially arranged and in the tabularium



Text-fig. 2. *a, b, Sulcorphyllum brownae* (Hill); longitudinal section,  $\times 4.8$ , based on University of New England no. F8689, and transverse section,  $\times 3.2$ , based on University of New England no. F8691. *c, Trapezophyllum elegantulum* (Dun); longitudinal section,  $\times 4.8$ , after Hill.

are differentiated into two orders. In the outer and middle parts of the dissepimentarium they are thin and smooth to moderately thick and carinate; at the inner dissepimentarium they are strongly dilated and fusiform in transverse section, in places adjacent septa are in contact. In the only known species the major septa alone extend into the tabularium, where they are attenuate, smooth and just withdrawn from the axis. The dissepimentarium is in three concentric zones: the outer consists of flat dissepiments, the middle of outwardly and upwardly convex dissepiments in several ranks, and the inner zone consists of regularly superposed horseshoe dissepiments. In the inner zone, the trabeculae show typical phacellophyllid divergence, but in the middle and outer zones they are directed upwards and outwards. The tabulae are incomplete and irregular in shape, many are strongly arched; their spacing, however, is generally fairly regular.

*Distinctions.*—The cerioid growth form and the complex dissepimentarium distinguish this genus from other phacellophyllids. In its possession of outer flat dissepiments *Sulcorphyllum* resembles *Trapezophyllum* which is also cerioid, but there is no zone of outwardly convex dissepiments between the horseshoe and flat dissepiments in *Trapezophyllum*.

*Hexagonaria* [= *Prismatophyllum*] has an entirely different dissepimentarium consisting of inwardly and upwardly convex dissepiments and disphyllid trabeculae.

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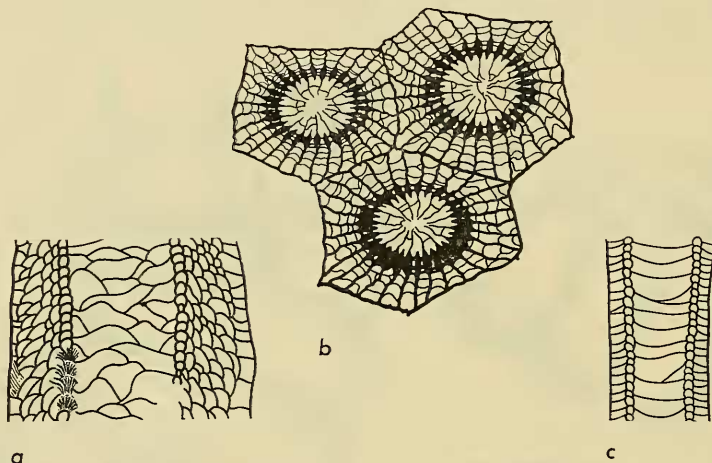
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## SULCOPHYLLUM BROWNAE (Hill). (Text-figures 2a, b.)

1942a. *Prismatophyllum brownae*, sp. nov.; Hill, pp. 143, 152, Pl. 3, figs 4a, b.

1942. *Prismatophyllum brownae* Hill; Brown, p. 170.

*Types*.—Holotype, Sydney University no. 8152. Limestone near Sulcor Quarry, Portion 88 or 115, Parish of Burdekin, near Attunga, N.S.W. Hill (1942a) believed this limestone to be early Middle Devonian, but it may be late Lower Devonian.

Hypotypes 1 and 2, University of New England nos. F8689, 8690. Sulcor Limestone, same locality as holotype.

*Remarks*.—The following comments are based on a study of about eight specimens and are intended to supplement Hill's description of the holotype. The maximum corallite width is about 12.0 mm. and the maximum number of septa is  $19 \times 2$ . Ridges presumably representing extremely short tertiary septa are present on the inner side of the epitheca in places. Hill denied the presence of flat dissepiments in the species; however, they appear to be visible in the published figure of the holotype and are certainly present in the sixteen longitudinal sections studied by the writer.

## References.

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## EXPLANATION OF PLATE XIX.

Figs 1, 2. *Zelolasma gemmiforme* (Etheridge); transverse and longitudinal sections,  $\times 3$ , University of New England no. F8690.

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*Types*.—Holotype, Sydney University no. 8152. Limestone near Sulcor Quarry, Portion 88 or 115, Parish of Burdekin, near Attunga, N.S.W. Hill (1942a) believed this limestone to be early Middle Devonian, but it may be late Lower Devonian.

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